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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,938	02/13/2002	Yue Der Chih	67,200-489	9831

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EXAMINER

BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
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2112

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/075,938	Applicant(s) CHIH, YUE DER	
	Examiner Stephen M. Baker	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-19 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-9, 11-19 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,471,478 to Mangan *et al* (hereafter Mangan).

Mangan discloses a flash EEPROM “non-volatile” memory system for storing sector-sized (512-byte) data blocks. Referring to Mangan’s Fig. 3, a typical block (205) includes a data sector portion (207) and an overhead portion (209), both of which extend across all four rows of a block and share common column addresses (col. 5, lines 14-20). Data is preferably read one row at a time (col. 5, lines 28-29). The rows and columns shown in the figures are addressable using an X-address and a Y-address (column 2, lines 24-28). Data transfers between the EEPROM modules and an associated storage controller occur in eight-byte (64-bit) ‘chunks’ thus apparently reading 64 bit-columns of a row. Fig. 4 shows the data sector in terms of the chunks, there being 18 chunks in each of the four rows of a ‘block’ which is a 512-Byte data sector plus 128 Bytes of sector ‘overhead’ data. A first ‘overhead’ portion (215) shown by Mangan consists of a stack of chunks designated “Stack 0” which includes spare columns, shown in Mangan’s Fig. 5 as column replacement chunk portions (219, 221, 223, 225). Mangan’s second overhead portion (217), designated “Stack 1,” includes ECC-protected “repairing data”, including pointers to up to seven failed sector data bits

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in the same row, in the form of seven bad bit pointers BBP0-BBP7. This ECC protection permits successful repair despite “corrupted repairing data” bit errors anywhere within the repair data. Mangan teaches that a plurality of bad column pointers may be included as well (column 8, lines 45-56). Consequently, Mangan’s spare columns can be associated with any data columns. Mangan’s storage controller (133) is “separate from said information array” and has functionality requiring an “error correction coding circuit”, necessarily “enabled” for operation when called for, within. Mangan’s interpreting of the overhead data is to “identify and repair defective columns ... associated with said non-volatile memory.” The data sector portion (207) and overhead portion (209) of each block (205) presumably “share a read circuit” as they are contiguous parts of the same non-volatile array.

Further regarding claims 1-3, 7-9, 11-13, 15, and 17-19, Mangan’s storage controller (133) performs ECC functions (column 4, line 61) and presumably retains the ECC-corrected overhead data bits in internal registers as they are processed, however the circuitry within Mangan’s controller is not shown, so Mangan does not show any registers (“volatile latch array”) in the storage controller (133) for retaining and interpreting the defect information included in the overhead. Official Notice is given that using registers (a “volatile latch array”) in a controller processor was conventional at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Mangan’s storage controller with logic including a “volatile latch array.” Such an implementation would

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have been obvious because using registers within a controller processor was already conventional.

Further regarding claims 4 and 14, Mangan's second overhead portion (217), also includes ECC-protected "repairing data" in the form of a bad block flag (257) and an accompanying replacement block "repair" pointer (261), thus Mangan's memory system apparently supports replacing entire block rows with spare alternative block rows.

Further regarding claims 6 and 16, The host computer for Mangan's memory system is presumably initialized to some extent before accessing Mangan's memory system.

Further regarding claim 22, the link between Mangan's controller and non-volatile memory array apparently involves sharing between array peripheral logic and the controller (133).

Further regarding claim 23, as the entire row of a block is read to obtain sector data with ECC and sector overhead (including "repairing data") with ECC, Mangan's ECC logic is apparently enabled "unconditionally when accessing an information row ... to make certain said repairing data will be correctly obtained."

Allowable Subject Matter

3. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments filed 26 September 2008 have been fully considered but they are not persuasive.

As noted above, Mangan's repairing data is ECC-protected in addition to including bad bit pointers BBP0-BBP7 for up to seven failed sector data bits in the same row. This ECC protection permits successful repair despite "corrupted repairing data" bit errors anywhere within the repair data. Applicant refers instead to spare columns in Mangan's overhead stack 0 when discussing the aspect of "corrupted repairing data" in the invention, which does not address the rejection.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques H. Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen M. Baker/
Primary Examiner
Art Unit 2112

smb